

RENAC

2020

Renac Power Overview

Smart Energy for Life



Renac Power Technology Co.,Ltd.

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About RENAC



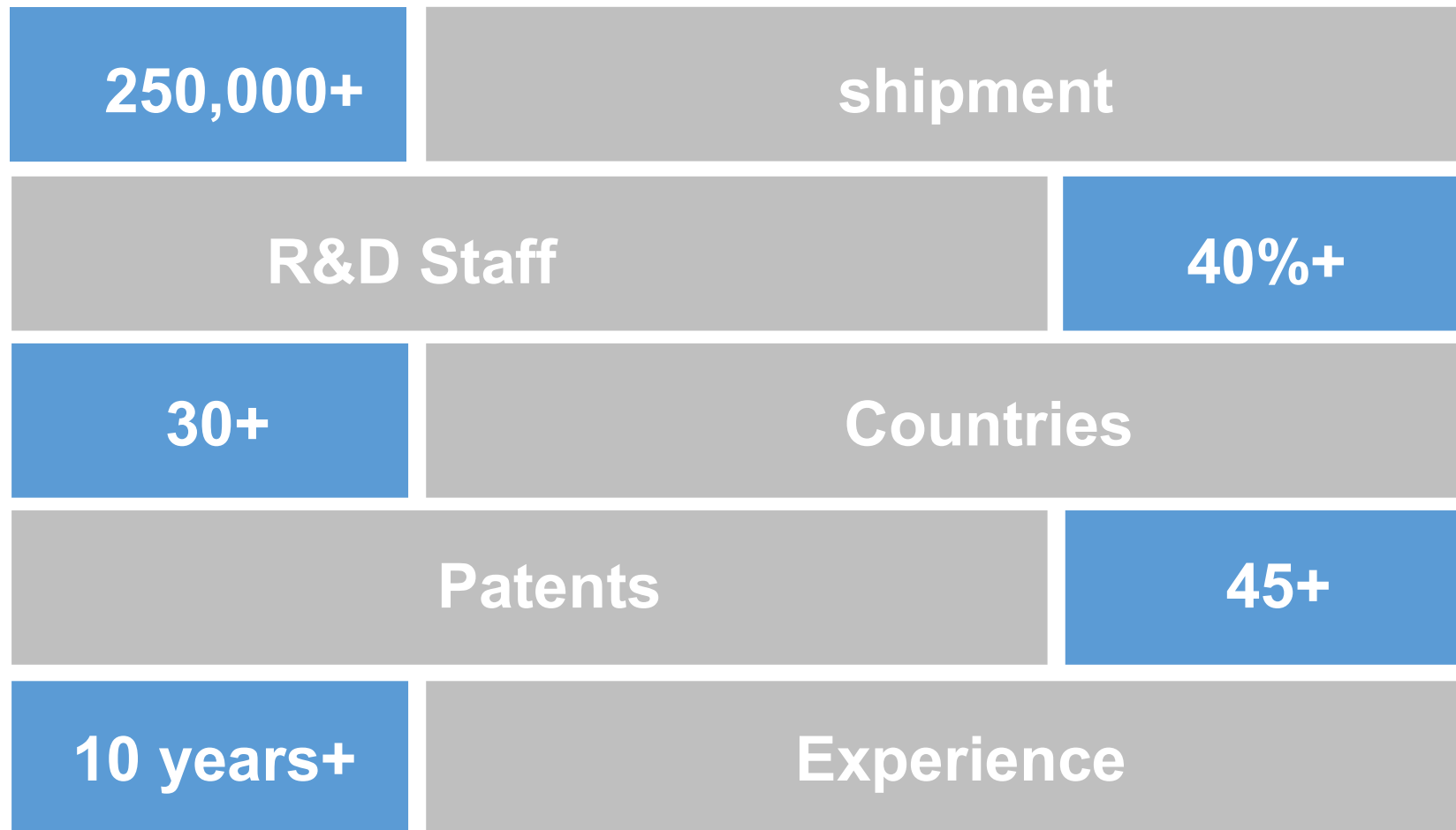
About RENAC

RENAC | *Smart Energy for life*

Renac Power is a renewable energy company with more than 10 years experience, focuses on R&D and manufacturing energy storage system and on-grid inverters with smart management technology to realize digitalized smart energy solutions for residential and commercial projects.

By the combination of digital technology and PV technology, Renac could provide reliable solutions for micro grid, energy IOT, intelligent energy O&M solutions.





About RENAC —Perfect Production Facility

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Machining



SMT



Welding



Assembly



Function
test 1



Aging test



Function
test 2



Package

02.

Products 2020



**On-Grid
inverter**

**Home ESS
Solution**

**Energy
Cloud**

A photograph of a white house with a red-tiled roof. A large blue circle is overlaid on the roof, containing the text 'On-Grid inverter'. The house has several windows with grey shutters and a silver downspout. The sky is clear blue.

On-Grid inverter

Product 2020 —On-grid Inverters

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R1 Baby Series



Single phase
Single MPPT

R1-1K1-SS R1-1K6-SS
R1-2K2-SS R1-2K7-SS
R1-3K3-SS R1-3K7-SS

R1 Kiddy Series



Single Phase
Dual MPPT

NAC4K-DS NAC5K-DS
NAC6K-DS NAC7K-DS
NAC8K-DS

R3 Micro Series



Three Phase
Dual MPPT

R3-4K-DT R3-5K-DT
R3-6K-DT R3-8K-DT
R3-10K-DT R3-12K-DT
R3-15K-DT

R3 Pro Series



Three Phase
Dual MPPT

NAC20K-DT
NAC25K-DT
NAC30K-DT
NAC33K-DT

R3 Plus Series



Three Phase
Four MPPT

NAC50K
NAC60K
NAC70K
NAC80K

1KW

3KW

8KW

15KW

33KW

80KW

Core Competences

Efficiency

- High efficiency across wide operating range
- Low turn-off DC voltage
- Intelligent MPPT algorithm
- Multi MPPT

Reliability

- Top materials suppliers
- IP65 class protection
- Life time and thermal analysis
- Over 50 test items
- Over 10 years experiences on PV inverters

Intelligent

- Interactive information with APP
- Remote active/reactive power limit control
- Remote firmware upgrade
- Monitor the PV string by inverter

Flexibility

- Wifi, Ethernet, GPRS, RS485, RS232
- Centralized O&M Cloud center
- OEM & Customized service

Core Competences



On-grid Inverters

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Single Phase R1-1K~3K



R1-1K1-SS R1-1K6-SS
R1-2K2-SS R1-2K7-SS
R1-3K3-SS R1-3K7-SS

Features

- Built-in zero export function(Optional)
- Natural Ventilation, Mute Operation
- Compact and lightweight
- Precise MPPT algorithm
- Built-in WiFi / GPRS with real time PV Monitoring
- Optional DC switch

On-grid Inverters

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Single Phase NAC4K~8K



NAC4K-DS
NAC5K-DS
NAC6K-DS
NAC7K-DS
NAC8K-DS

Features

- Built-in zero export function(Optional)
- Precise MPPT algorithm, over 97.8% Max. efficiency
- Built-in WiFi / GPRS with real time PV Monitoring
- High frequency switching technology- Smaller
- Smarter
- Natural Ventilation, Mute Operation

On-grid Inverters

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Three Phase R3 - 4K~15K



R3-4K-DT
R3-5K-DT
R3-6K-DT
R3-8K-DT
R3-10K-DT
R3-12K-DT
R3-15K-DT

Features

- Built-in zero export function(Optional)
- Precise MPPT algorithm, over 98.3% Max. efficiency
- Built-in WiFi / GPRS with real time PV Monitoring
- High frequency switching technology- Smaller , Smarter
- Integrated DC switch
- Inbuilt Type II SPD Protection in AC / DC power side

On-grid Inverters

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Three Phase NAC20K~33K



NAC20K-DT
NAC25K-DT
NAC30K-DT
NAC33K-DT

Features

- Built-in zero export function(Optional)
- Precise MPPT algorithm, over 98.5% Max. efficiency
- Built-in WiFi / GPRS with real time PV Monitoring
- High frequency switching technology- Smaller , Smarter
- Integrated DC switch
- Inbuilt Type II SPD Protection in AC / DC power side
- Remote active/reactive power limit control

On-grid Inverters

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Three Phase NAC50K~80K



NAC50K
NAC60K
NAC70K
NAC80K

Features

- Precise MPPT algorithm, over 99.0% Max. efficiency
- Built-in WiFi / GPRS with real time PV Monitoring
- High frequency switching technology- Smaller , Smarter
- Integrated DC switch
- Inbuilt Type II SPD Protection in AC / DC power side
- String monitoring ,shorter O&M time
- Remote active/reactive power limit control

A photograph of a modern house at dusk. The house has a light-colored exterior wall and a dark, flat roof. A large, dark blue circular overlay is centered on the image. Inside the circle, the text "Home ESS Solution" is written in white. The background shows a wooden deck, a glass door, and some outdoor furniture. The sky is a deep blue, and there are some plants in the foreground.

Home ESS Solution

N1 HL Series ESC3000-DS / ESC3680-DS / ESC5000-DS



Hybrid Inverter
Compatible with
48V battery

- Li-ion /Lead-acid battery
- On-grid(5kW), Charging and discharging(3kW),
• EPS Backup(3kW)
- Active power continuously adjustable (0~100%)
- EMS integrated, up to 8 operation modes
- VPP compatible
- FFR(Firm Frequency Response) function
- Remote charge and discharge function

N1 HV Series N1-HV-3.0 / N1-HV-3.7 / N1-HV-4.6 / N1-HV-



Hybrid Inverter
Compatible with
HV battery

- Compatible with high voltage battery system, low system cost
- EPS function design
- Active power continuously adjustable (0~100%)
- EMS integrated, up to 8 operation modes
- VPP compatible
- FFR(Firm Frequency Response) function
- Remote charge and discharge function

N1 AC series N1-AC-3.0L / N1-AC-3.7L / N1-AC-5.0L



- Capable of being on grid solar system for Retrofit .
- Easy to compliance with different type of Li-on battery.
- UPS function with 10ms automatic switchover.
- 10% over power support for 10s.
- Self-consumption for zero export.
- USB flash disk for program update and device setting.

Home ESS Solution

RENAC | *Smart Energy for life*

Power Case
PC-3.58 / PC-7.16 / PC-10.74/ PC-14.32



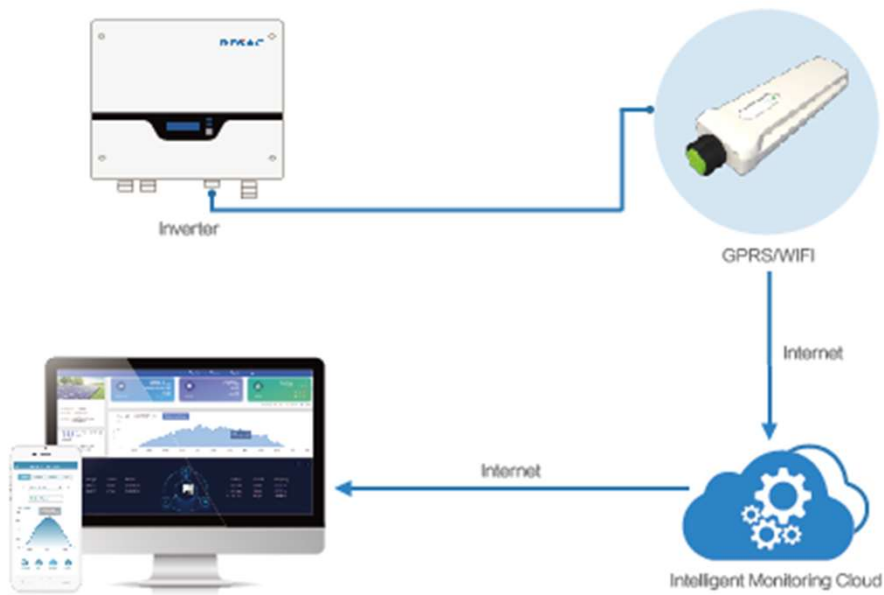
- the Metal CAN cells with aluminum casing
- long life-span and safety
- high power output & usable energy ratio
- modular design & expandable system
- natural cooling & easy installation
- certifications available



Energy Cloud

Data Transfer Unit

ST-GPRS/ST-WIFI (Stick type GRPS/WIFI Module)



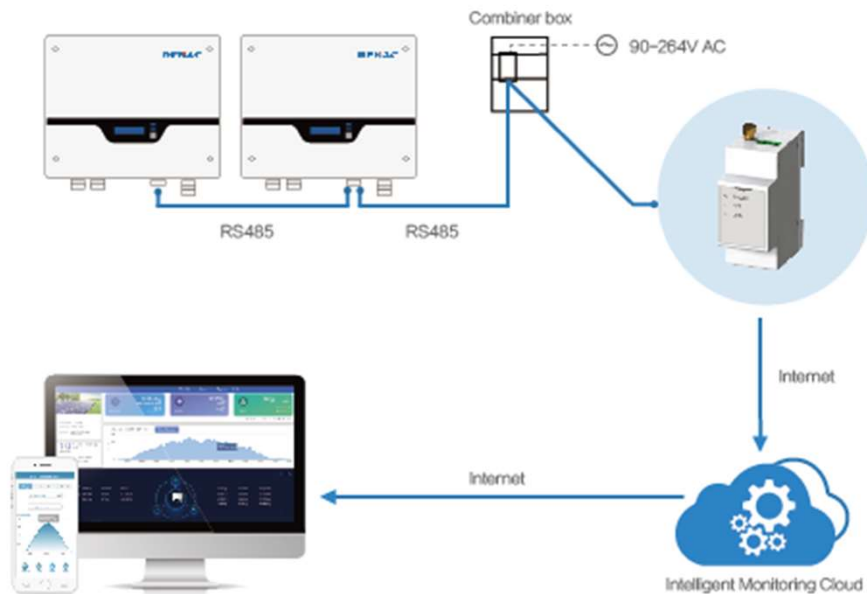
FEATURES:

- Remote monitoring via cloud platform.
- Real-time monitoring device status, between $-30^{\circ}\text{C}\sim 85^{\circ}\text{C}$.
- Support multiple communication protocols (standard/nonstandard).
- Strong reliability and stable operation.

Data Transfer Unit

RENAC | *Smart Energy for life*

RT-GPRS/RT-WIFI (Rail type GRPS/WIFI Module)



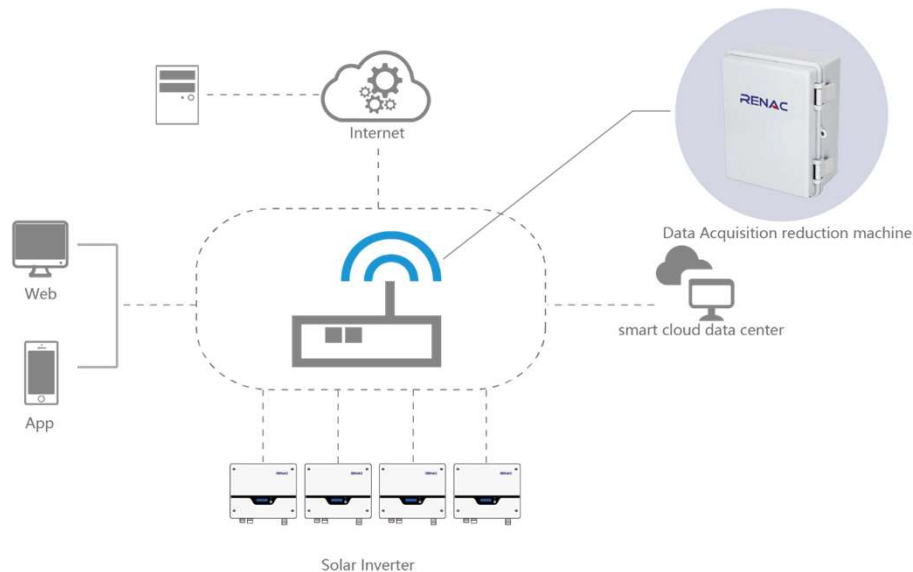
FEATURES:

- Input voltage : AC 220V.
- Inverter communication: RS485.
- Communication parameters: 9600/N/8/1.
- Remote communication : GPRS/wifi.
- Able to connect up to **8** inverters.
- Support remote firmware upgrade.
- Support 850/900/1800/1900MHz SIM card.
- Operating temperature range: -20~70°C.

Data Transfer Unit

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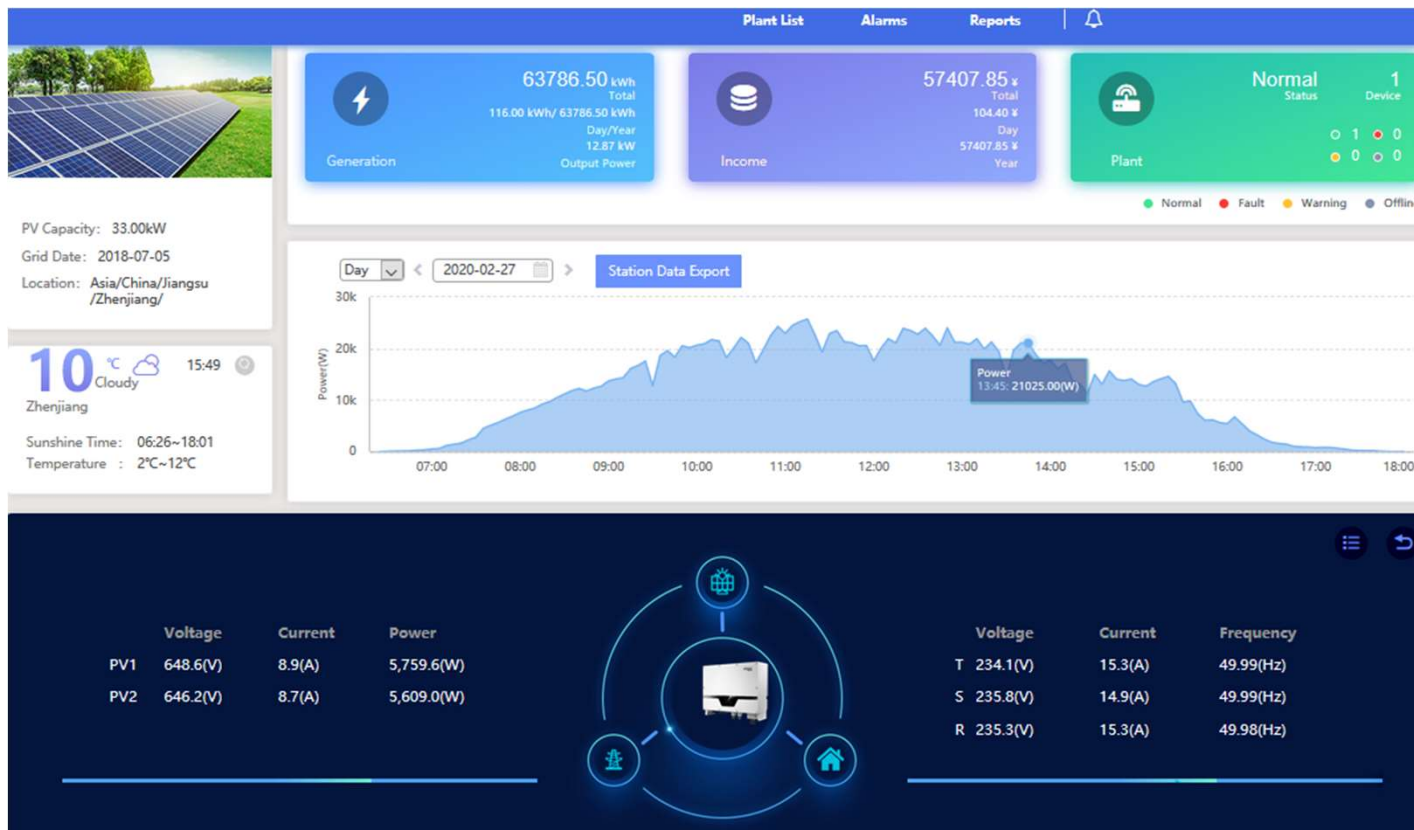
UDL-100 (Universal Data Logger)



FEATURES:

- Built-in communication server and Web monitoring site.
- Able to send info to remote server (RJ45/GPRS/WIFI).
- Can be connected to a variety of devices including inverters, modules, combiner boxes, controllers and sensors, etc., to satisfy various demands.
- Support up to 4 strings of 485, and each string can connect up to 18 devices.
- Compatible with 104 communication protocols.

Renac Portal Web&APP



SOM Cloud (Solar Power Plant O&M Cloud)



Intelligent O&M Centralized Monitoring Center

Power station statistics
Group management
Target management
Decision View

The Intelligent O&M Version for PC

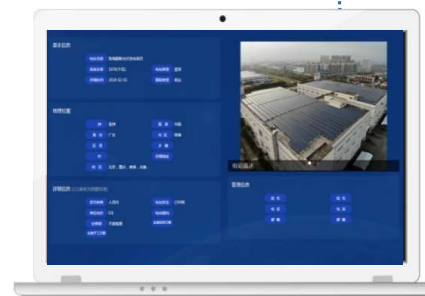
Date analyse
Fault diagnose
Loss statistic

The Intelligent O&M on stations level for PC

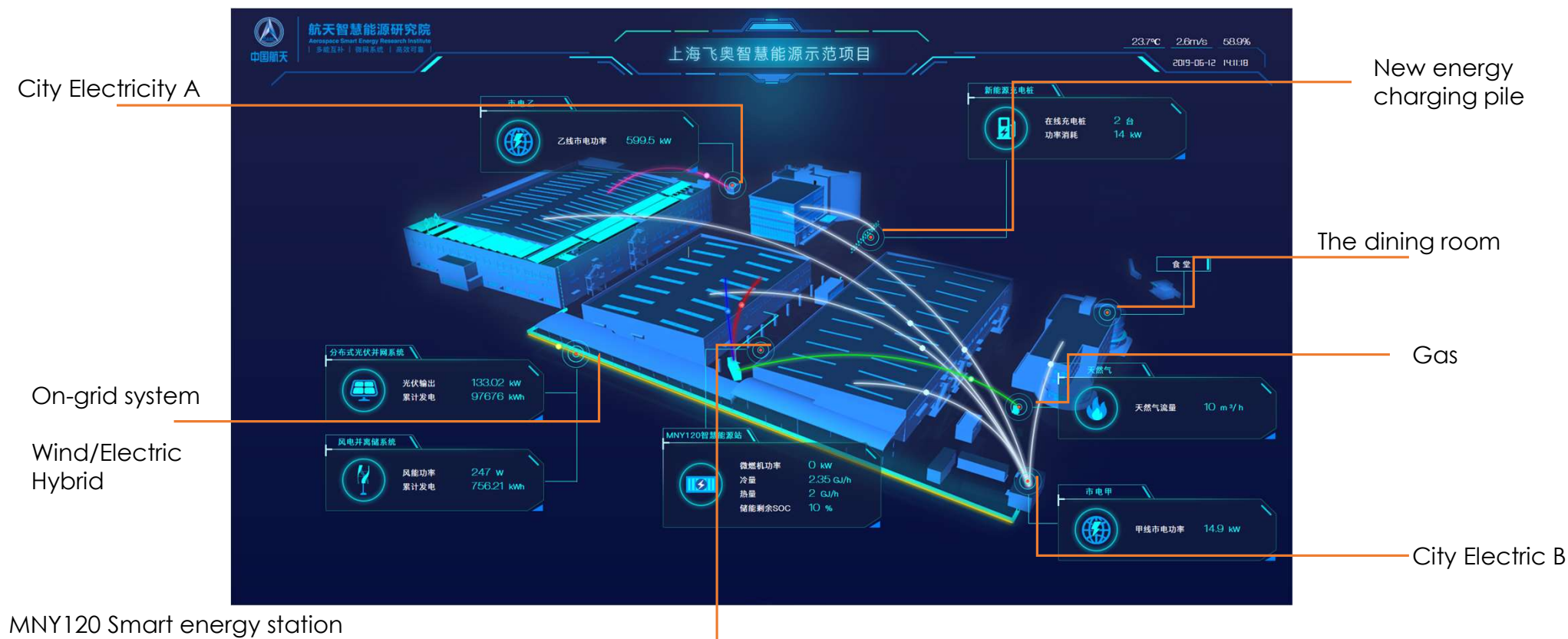
Work order mangement
Operation mangement
Stock mangement
Record mangement

The APP

Work order receive
Fault processing
Work order feedback



MEM Cloud (Multi-energy management platform)



03.

Quality Control



1. **Strict Component Suppliers Control**
2. **Quality Management Procedure**
3. **Product Certificates - IEC**
4. **ISO certification**

Quality Control

—Strict Component Suppliers Control

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Main Cpu

IGBT

DC Switch

Capacitance

Relay

MOS

Cooling Fan

DC Connector

MOV

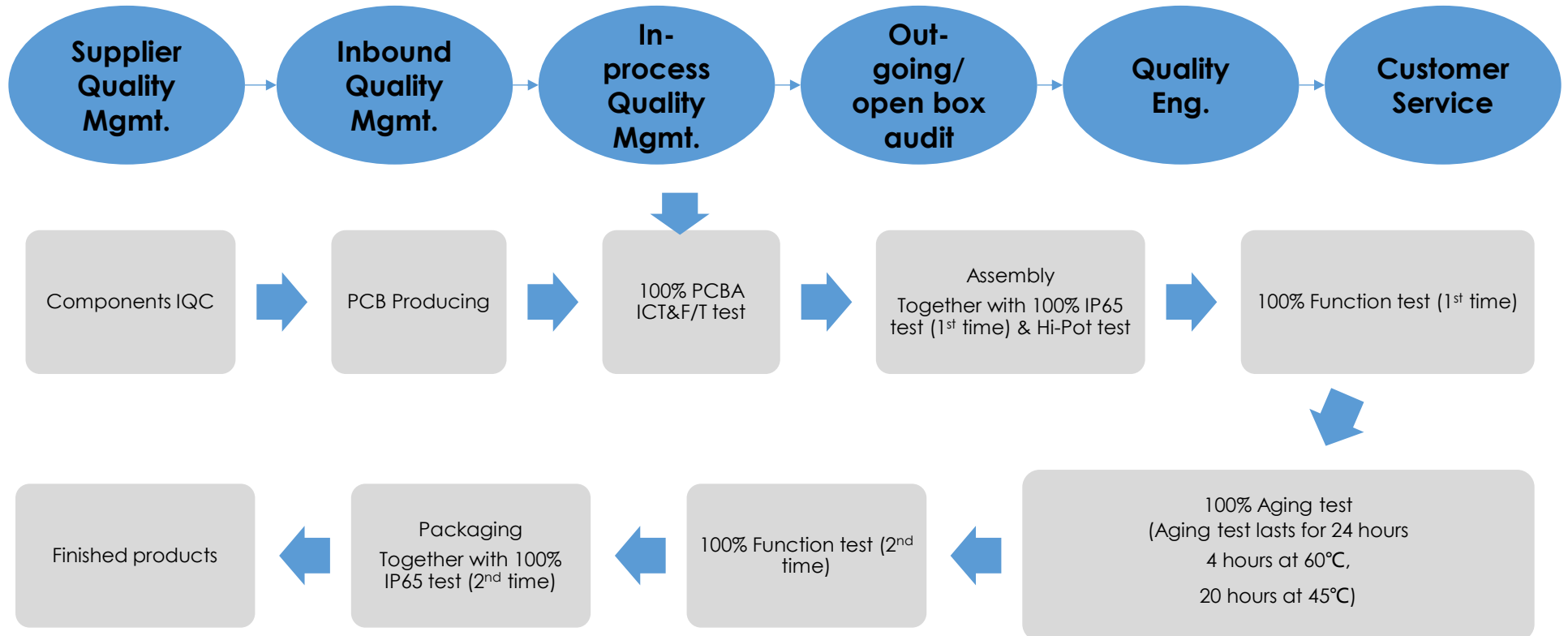
AC Connector Sensor



Quality Control —Quality Management Procedure

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Quality Control —Product Certificates

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Country	Standard/Certification	R1 Baby Series NAC1-3K-SS	R1 Kiddy Series NAC4-8K-DS	R3 Micro Series NAC6-15K-DT	R3 Pro Series NAC20-33K-DT	R3 Plus Series NAC50-80K	N1 Hybrid Series NAC3-5K-DS
China	CQC		✓				
Australia	AS4777		✓	✓			✓
New Zealand			✓	✓			✓
India	IEC 61727:2004&IEC 62116:2014&IEC 61683:199&IEC 60068-2-1/2/14/30	✓	✓	✓	✓		✓
Vietnam	IEC 61727:2004&IEC 62116:2014&IEC 61683:199&IEC 60068-2-1/2/14/30	✓	✓	✓	✓		✓
Mexico	IEC 61727:2004&IEC 62116:2014&IEC 61683:199&IEC 60068-2-1/2/14/30	✓	✓	✓	✓		✓
Sri Lanka	IEC 61727:2004&IEC 62116:2014&IEC 61683:199&IEC 60068-2-1/2/14/30	✓	✓	✓	✓		✓
CE	Safety: IEC62109-1:2010&IEC 62109-2:2011; EMC: IEC61000-6-1/2/3/4;	✓	✓	✓	✓		✓
Brazil	ABNT NBR 16149/16150	✓	✓	✓	✓		
Tunisia	VDE0126	✓	✓	✓	✓		
Bulgaria	VDE0126	✓	✓	✓	✓		
Greece	VDE0126	✓	✓	✓	✓		
UK	G98/G99		✓	✓	✓		
Spain	RD1699	✓	✓	✓	✓		
Turkey	EN50549-1:2019/ EN50438		✓	✓	✓		✓
Czech	EN50549-1:2019/ EN50438		✓	✓	✓		✓
Netherlands	EN50549-1:2019/ EN50438		✓	✓	✓		✓
Ireland	EN50549-1:2019/ EN50438		✓	✓	✓		✓
Denmark	EN50549-1:2019/ EN50438		✓	✓	✓		✓
Poland	EN50549-1:2019/ EN50438		✓	✓	✓		✓
Norway	EN50549-1:2019/ EN50438		✓	✓	✓		✓
Slovenia	EN50549-1:2019/ EN50438		✓	✓	✓		✓
Greece	EN50549-1:2019/ EN50438		✓	✓	✓		✓
Sweden	EN50549-1:2019/ EN50438		✓	✓	✓		✓
Finland	EN50549-1:2019/ EN50438		✓	✓	✓		✓
South Africa	NRS 097-2-1						✓

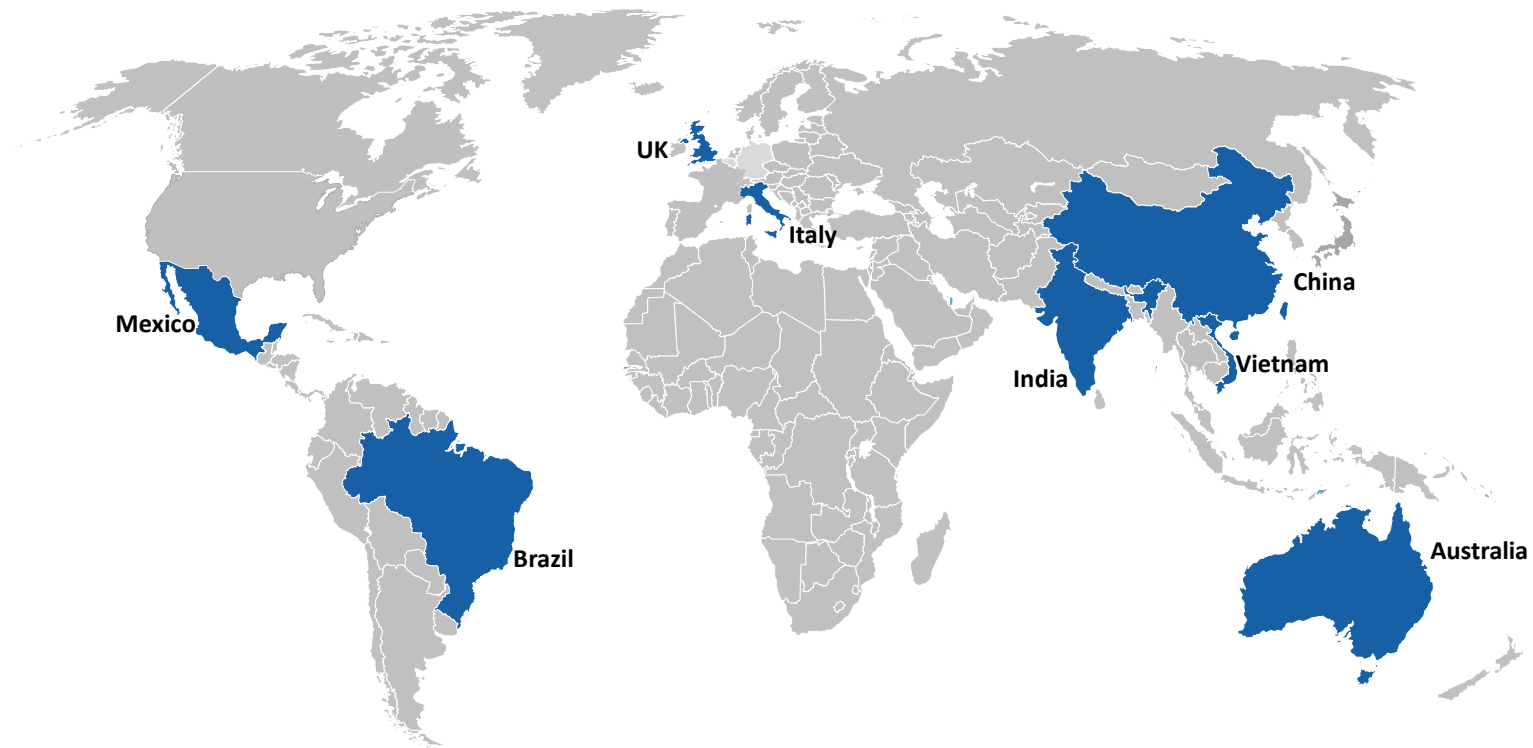
04.

Service Concept



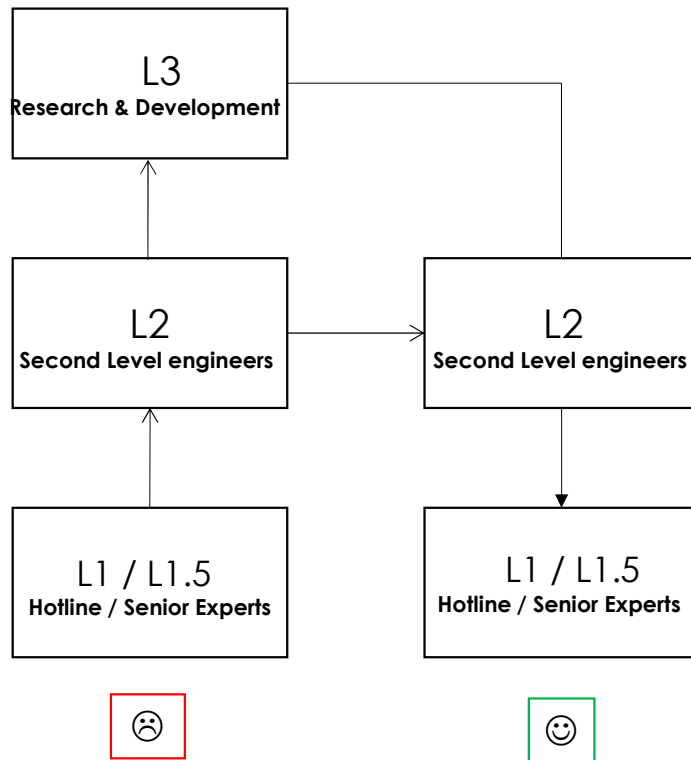
Service Concept
—Representation in **9** countries globally

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Service Concept —Feedback Process

Customer Support Process



Customer Support Process

Hotline Support (Level 1)

- Assistance and technical support on the phone or via email

Senior Experts Support (Level 1.5)

- Local support engineers

Second Level Support (Level 2)

- Highly qualified engineers working closely with R&D

R&D Support (Level 3)

- Highest escalation level to solve technical issues

05.

Project Reference





System Advantage

- Reducing LCOE;
- Stable power supply;
- CO₂ emission Reduction.



- **Project:** 60kw PV/60KW+ESS 31.2KWh+50kW Diesel
- Location : Kenya, Masai Mala;
- Application: Swiss Hotel





- **Project:** PV 16~40KW+ESS 16~72KWh+10kW Diesel generator + water purification.
- Application: Rural Electrification projects by Strass Energy and Twiga Solar
- Location : Kenya;

System Advantage

- Reducing LCOE;
- Stable power supply;
- CO₂ emission Reduction;
- Quick installation.



Project Reference_Residential Storage

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- **Project: residential storage**
- Location: UK
- Installed Capacity : 3.68kW + 7.2Kwh
- Application: solar+storage



- **Project: residential storage**
- Location: Sri Lanka
- Installed Capacity : 5KW
- Application: solar+storage



Project Reference_Residential Storage

RENAC | Make The Intelligent Energy Serve The Public



- **Project:** residential storage
- Location: Australia
- Installed Capacity : 5KW
- Application: solar+storage



Project Reference_On-grid Solar Systems

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Installation site: Poland
Installation time: 2019
Installed Capacity: 6KW



Installation site: Tunisia
Installation time: 2019
Installed Capacity: 2*2KW



Installation site: Italy
Installation time: 2020
Installed Capacity: 10KW

Project Reference_On-grid Solar Systems

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Thank You

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www.renacpower.com

